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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,261	03/09/2005	Yong-Ki Park	930086-2008	2904
7590 Ronald R Santucci Frommer Lawrence & Haug 745 Fifth Avenue New York, NY 10151				
EXAMINER				
HAILEY, PATRICIA L				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/527,261

Applicant(s)

PARK ET AL.

Examiner

PATRICIA L. HAILEY

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-9, 16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-9, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Applicants' remarks and amendments, filed on May 7, 2008, have been carefully considered. No claims have been canceled or added; claims 4-9, 16, and 17 remain pending in this application.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Document was filed on March 9, 2005.

Withdrawn Objection

The objection to claim 17 stated in the previous Office Action has been withdrawn in view of Applicants' amendment thereto.

The 112(1) rejection of claims 4-9, 16, and 17 for failing to comply with the written description requirement, stated in the previous Office Action, has been withdrawn in view of Applicants' persuasive arguments traversing this rejection.

Maintained Rejection

The following rejection of record have been maintained; the text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

2. *Claims 4-9, 16, and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Rossin (U. S. Patent No. 6,509,511) in view of Sato et al. (U. S. Patent No. 4,791,084).*

Rossin teaches a process for the decomposition of perfluoroalkanes via contact thereof with a catalyst comprising alumina. The catalyst preferably comprises a stabilizing agent (if present, in amounts ranging from 1 to 100 parts by weight per 100 parts alumina, see col. 6, lines 40-43 of Rossin), examples of which include phosphorus. See the Abstract of Rossin, as well as col. 3, lines 45-56 and col. 6, lines 14-39, the latter disclosing pseudoboehmite and aluminum hydroxide as exemplary sources of alumina (considered to read upon the “aluminum oxide catalyst” of **claim 5**).

The process takes place in the presence of water (col. 4, lines 30-46 of Rossin) and at elevated temperatures ranging from at least 400°C, and, especially preferred, temperatures of at least 600°C. See col. 4, line 66 to col. 5, line 6 of Rossin, as well as the Examples, which additionally disclose exemplary gas streams comprising the perfluoroalkanes, and, more specifically, water (considered to read upon the limitation “water vapor”), in amounts considered within the limitations recited in **claims 6 and 9**.

Additionally, the gas stream may comprise, in addition to perfluoroalkanes and water, an oxidizing agent, such as oxygen. See col. 3, lines 61-63 of Rossin. While no desirable numerical amount of oxygen is disclosed by Rossin, one of ordinary skill in the art would readily deduce that even a trace amount of oxygen would fall within

Applicants' claimed "concentration of 0-50%"; thus **claims 7 and 9** regarding the addition of oxygen is considered read upon by Rossin.

Exemplary perfluoroalkanes suitable for decomposition include trifluoromethane (CHF_3) and hexafluoroethane (C_2F_6). See col. 5, lines 44-52 of Rossin, as well as Examples II and IV, which disclose C_2F_6 and CF_4 as additional perfluoroalkanes (claims **4 and 8**).

Although Rossin discloses a catalyst comprising alumina, and a stabilizing agent that can be phosphorus, this reference does not specifically disclose the molar ratio recited in claim 5; Rossin also does not disclose sources of the phosphorus component, which is also recited in claim 5.

Sato et al. disclose a catalyst comprising alumina particles on which a phosphorus component has been fixed. See col. 3, lines 35-38 of Sato et al. (considered to read upon the limitation "wherein a surface of said aluminum oxide is loaded with phosphorous" in **claim 5**).

The catalyst is prepared by contacting a previously prepared alumina or alumina hydrate with a phosphoric ion-containing aqueous solution, drying and thereafter calcining the alumina. Exemplary phosphoric ion-containing aqueous solutions include aqueous solutions of phosphoric acid, ammonium hydrogen phosphate $[(\text{NH}_4)_2\text{HPO}_4]$, and ammonium phosphate. See col. 3, lines 56-61 of Sato et al. (considered to read upon the "phosphorus (P) component" in **claim 5**), as well as col. 4, lines 21-26.

The amount of phosphorus introduced in the alumina is preferably in a range corresponding to a P/Al atomic ratio of 0.01 to 0.20 (Al/P of 100 to 5).

Example 1 of Sato et al. depicts an exemplary embodiment in which an aluminum hydroxide is calcined, and orthophosphoric acid is subsequently added thereto to obtain phosphorus-containing alumina particles having a P/Al atomic ratio of 0.07 (Al/P 14.28). See col. 5, lines 41-55 of Sato et al.

Note that alumina and aluminum hydroxide are also disclosed in Rossin as exemplary alumina sources (col. 6, lines 14-25).

The phosphorus-containing alumina disclosed in Sato et al. is considered comparable to the catalyst disclosed in Rossin.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Rossin, which teaches a phosphorus-stabilized alumina catalyst, with the teachings of Sato et al., and thereby obtain Applicants' claimed invention. The catalyst of Sato et al. is considered to be within the purview of the catalyst disclosed by Rossin as an alumina stabilized with, for example, phosphorus.

Response to Arguments

In response to Applicants' arguments that the combined teachings of the references of record does not arrive at Applicants' claimed invention, the Examiner respectfully submits that Rossin is relied upon for its teachings regarding a process for

the decomposition of perfluoroalkanes via contact with a catalyst comprising alumina and a stabilizing agent, which may be phosphorus. Although Rossin teaches the presence of additional stabilizing agents, these agents are *preferred*, not required. See, for example, col. 3, lines 53-57. However, the teaching of Rossin of phosphorus as an exemplary stabilizer is considered to read upon Applicants' claims; selection of only phosphorus—and no other additional metallic components—as a stabilizer would have been within the purview of Rossin.

Sato et al. is relied upon regarding its teachings of a catalyst comprising alumina particles upon which a phosphorus component has been fixed, said phosphorus present in an range corresponding to a P/Al atomic ratio of 0.01 to 0.20 (Al/P of 100 to 5). The fact that Sato et al. employ said catalyst in a hydrocracking process does not detract the reference from being an applicable secondary teaching to Rossin. Sato et al. teaches the existence of a catalyst comparable to that disclosed in Rossin.

Applicants' arguments regarding the unexpected results obtained from the decomposition of perfluoroalkanes (i.e., its complete conversion to only carbon dioxide) have been carefully considered, but are not persuasive, as these features are not recited in the instant claims.

For these reasons, Applicants' arguments are not persuasive, and the rejection of record is maintained.

Declaration under 37 CFR 1.132

3. The Declaration under 37 CFR 1.132 filed May 7, 2008, is insufficient to overcome the rejection of claims 4-9, 16, and 17 based upon Rossin and Sato et al. as set forth in the last Office Action (and maintained in this Office Action) because it shows no comparison between the claimed invention and the cited references of record, nor is it commensurate in scope with the instant claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICIA L. HAILEY whose telephone number is (571)272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerry A Lorengo/
Supervisory Patent Examiner, Art Unit 1793

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/PATRICIA L. HAILEY/
Examiner, Art Unit 1793
August 11, 2008